

IN THE CLAIMS

Please add new Claims 96-142:

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96. (New) A surgical device, comprising:

a penetrator;

a cutting blade located at a distal end of said penetrator;

an insufflation passageway located in said penetrator and configured to discharge a pressurized fluid while said cutting blade is inside a body tissue and to transport said pressurized fluid to the body tissue when said cutting blade substantially penetrates the body tissue; and

a guard movable with respect to said cutting blade and configured to selectively expose said cutting blade;

wherein said guard has an apex such that an angle subscribed in the apex of the guard is smaller than an angle subscribed by said blade for progressively covering said blade during deployment of the penetrator.

97. (New) The surgical device according to claim 96, which comprises a tissue expander expanded at a distal end of the guard for expanding a tissue cut by said cutting blade.

98. (New) The surgical device according to claim 96, wherein said surgical device further comprises:

an external reservoir configured to supply said insufflation passageway with said pressurized fluid.

99. (New) The surgical device according to claim 98, wherein said surgical device further comprises a check valve positioned between said insufflation passageway and an

exterior of the surgical device, said check valve being configured to prevent leakage from said insufflation passageway.

100. (New) The surgical device according to claim 96, wherein said insufflation passageway is configured to be pressurized during an insertion of said cutting blade into the body tissue.

101. (New) The surgical device according to claim 96, wherein said pressurized fluid comprises a gas.

102. (New) The surgical device according to claim 97, wherein said insufflation passageway passes through said one of said cylinder penetrator and said expander.

103. (New) The surgical device according to claim 96, wherein:

said cutting tip includes a blade configured to intersect substantially at the main axis of said penetrator; and

said insufflation passageway is formed in one of said guard and said expander.

104. (New) The surgical device according to claim 96, wherein said penetrator is hollow.

105. (New) The surgical device according to claim 96, wherein said guard has a slot formed therein which is aligned with said blade to permit at least a partial covering of said blade by said guard.

106. (New) The surgical device as claimed in claim 96, which comprises a stem member positioned within said penetrator for engagement with said guard for moving said guard towards said cutting tip.

107. (New) The surgical device according to claim 96, wherein said cutting tip is of a smaller diameter than an outer diameter of said penetrator such that a cut made in the tissue by the blade results in a smaller lumen than that of the cannula.

108. (New) The surgical device according to claim 96, wherein said penetrator comprises a cylindrical penetrator.

109. (New) A surgical device, comprising:

a penetrator having a main axis;

a cutting blade located at a distal end of said penetrator; and

an insufflation passageway for discharging a pressurized fluid while said cutting blade is inside a body tissue and for transporting said pressurized fluid across said body tissue when said cutting blade substantially penetrates said body tissue; and

a guard moveable with respect to said cutting blade wherein said guard has an apex such that an angle subscribed in the apex of the guard is smaller than an angle subscribed by said blade for progressively covering said blade during deployment of the penetrator.

110. (New) The surgical device according to claim 109, which comprises:

an external reservoir for supplying said insufflation passageway with said pressurized fluid; and

a check valve positioned between said insufflation passageway and an exterior of the device, said check valve being configured to prevent leakage from said insufflation passageway, wherein said check valve comprises a flap valve openable by said penetrator.

111. (New) The surgical device according to claim 109, which comprises a seal which is concentrically positioned with said penetrator, said seal being positioned in said handle and being sealingly engageable with said flap valve.

112. (New) The surgical device according to claim 109, wherein said penetrator comprises a cylindrical penetrator.

113. (New) A surgical device, comprising:

a penetrator having a main axis;

at least one cutting blade located at a distal end of said penetrator;

a guard movable with respect to said blade and configured to expose said cutting blade while said cutting tip is beginning to cut a tissue layer and while said at least one cutting blade is in said tissue layer, and for progressively covering the end of said at least one cutting blade immediately after a most distal point of said cutting blade has substantially passed through said tissue layer;

wherein said at least one cutting blade comprises a plurality of blade edges being configured to intersect a distal portion of said penetrator and to intersect substantially along said main axis;

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C2 wherein said guard comprises at least one safety guard having at least one safety guard safety guard edge.

114. (New) A surgical device as claimed in Claim 113, which comprises:

a tissue expander located at a distal end of said penetrator for expanding a tissue cut by said at least one cutting blade for insertion of said penetrator.

115. (New) The surgical device of claim 113, wherein said cutting tip comprises a tissue expander having an insufflation passageway formed therein.

116. (New) The surgical device of claim 115, wherein said at least one guard comprises safety guards having a surface which is substantially parallel with said blade.

117. (New) The surgical device of claim 113, further comprising:

a spring configured to allow translation of said guard responsive to a force generated during a driving of said cutting tip into and through said tissue layer.

118. (New) The surgical device of claim 113, wherein said tissue expander has a face portion thereof located in proximity with said cutting tip.

119. (New) A surgical device, comprising:

a handle configured to be gripped;  
a penetrator having a main axis and being attached to said handle;  
at least one cutting blade located at a distal end of said cylinder penetrator;  
a tissue expander located configured to expand a tissue cut by said cutting tip for insertion of said penetrator; and  
a guard movable with said tissue expander and configured to expose said cutting tip while said cutting tip is beginning to cut a tissue layer and while said cutting tip is in said tissue layer, and to progressively cover the end of said cutting tip immediately after a most distal point of said cutting tip has substantially passed through said tissue layer.

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120. (New) A surgical device, comprising:

a penetrator;  
at least one cutting blade located at a distal end of said penetrator; and  
a guard movable with respect to said blade and being configured to selectively expose said at least one cutting blade wherein said guard has an apex such that an angle subscribed in the apex of the guard is smaller than an angle subscribed by said at least one cutting blade for progressively covering said at least one cutting blade during deployment of the penetrator.

121. (New) The surgical device as claimed in claim 120, which comprises:

a tissue expander configured to expand a tissue cut by said at least one cutting blade for insertion of said penetrator wherein said guard is slidably affixed between said tissue expander and said cutting tip.

122. (New) The surgical device according to claims 96, 113 or 120, wherein said cutting blade comprises:

a first blade having a first blade edge, said first blade edge being attached to a distal end of said penetrator, being oriented substantially parallel to a main axis of said penetrator

and being configured to produce an opening in a body tissue for insertion of a surgical cannula.

123. (New) The surgical device according to claim 122, wherein said cutting blade further comprises:

a blade having a first and second blade edge, wherein:

said blade is attached to a distal end of said penetrator and is oriented substantially parallel to said main axis of said penetrator.

124. (New) The surgical device according to claim 123, wherein said intersection of said first and second blade edges is substantially located along said main axis of said penetrator.

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125. (New) The surgical device according to claim 124, wherein said blade is substantially planar.

126. (New) The surgical device according to claim 122, wherein said blade is substantially planar.

127. (New) A surgical device, comprising:

a penetrator;

at least one cutting blade located at a distal end of said penetrator;

a guard configured to slidably cover and uncover said at least one cutting blade, said guard being movable with respect to said blade and being configured to selectively expose said at least one cutting blade; and

a locking mechanism configured to hinder an accidental uncovering of said at least one cutting blade by said guard wherein said guard has an apex such that an angle subscribed in the apex of the guard is smaller than an angle subscribed by said at least one cutting blade for progressively covering said at least one cutting blade during deployment of the penetrator.

128. (New) The surgical device as claimed in claim 127, which comprises a tissue expander positioned on one of said penetrator and said guard.

129. (New) A surgical device, comprising:

a penetrator;

at least one cutting blade located at a distal end of said penetrator;

a tissue expander configured to expand a tissue cut by said at least one cutting blade;

a guard for slidably covering and uncovering said at least one cutting blade, said guard being moveable with respect to said at least one cutting blade; and

at least one side horn configured to facilitate pushing, pulling, rotation, and tilting of said surgical device wherein said guard has an apex such that an angle subscribed in the apex of the guard is smaller than an angle subscribed by said blade for progressively covering said at least one cutting blade during deployment of the penetrator.

130. (New) The surgical device of claim 129, further comprising:

a cannula attachable to a removable portion of said handle.

131. (New) A surgical device, comprising:

means for gripping said surgical device;

means mounted on said means for gripping said surgical device for passing an object of interest into a hole in a tissue member;

means for expanding the tissue member which is mounted on said means for passing an object into the hole in the tissue member;

means mounted on said means for passing the object into the hole in the tissue member for cutting the hole for insertion of said means for passing an object into the hole in the tissue member, said means for cutting the hole in the tissue member being movable with respect to said means for cutting the tissue member; and

means for halting said means for cutting wherein said means for halting comprises means for guarding said means for cutting, said means for guarding said means for cutting being movable with respect to said means for cutting wherein said means for guarding said means for cutting has an apex such that an angle subscribed in the apex of the means for guarding is smaller than an angle subscribed by said means for cutting for progressively covering said means for cutting during deployment of said means for expanding the tissue member.

132. (New) The surgical device of claim 131, wherein said means for guarding said means for cutting comprises at least one guard.

133. (New) The surgical device of claim 131, wherein said means for halting comprises means for insufflating a tissue beneath said means for cutting.

134. (New) A surgical device, comprising:

penetrator means having a main axis;

means for cutting body tissue located at a distal end of said penetrator means;

tissue expander means expanded at a distal end of the penetrator means for expanding a tissue cut by said means for cutting tissue;

insufflation passageway means configured to discharge a pressurized fluid while said means for cutting tissue is inside a body tissue and to transport said pressurized fluid to the body tissue when the cutting blade means substantially penetrates the body tissue; and

guard means for guarding said means for cutting tissue, said guard means being movable with respect to said cutting blade means and configured to selectively expose said means for cutting tissue wherein said means for guarding said means for cutting tissue has an apex such that an angle subscribed in the apex of the means for guarding is smaller than an



angle subscribed by said means for cutting tissue for progressively covering said means for cutting tissue during deployment of said means for expanding the tissue member.

135. (New) The surgical device according to claim 134, wherein said surgical device further comprises an external reservoir configured to supply said insufflation passageway means with said pressurized fluid.

136. (New) The surgical device according to claim 135, wherein said surgical device further comprises check valve means positioned between said insufflation passageway means and an exterior of a surgical device, said check valve means being configured to prevent leakage from said insufflation passageway means.

137. (New) The surgical device according to claim 135, wherein said insufflation passageway means is configured to be pressurized during insertion of said cutting tip into the body tissue.

138. (New) A surgical device, comprising:

a penetrator;

a cutting blade located at a distal end of said penetrator;

an insufflation passageway configured for discharging a pressurized fluid while said cutting blade is inside a body tissue and for transporting said pressurized fluid to the body tissue when said cutting blade substantially penetrates the body tissue; and

a guard movable with respect to said cutting blade, said guard being configured to selectively expose said cutting blade.

139. (New) The surgical device as claimed in claim 138, which comprises a tissue expander expanded at a distal end of the penetrator for expanding a tissue cut by said cutting blade.

140. (New) A surgical device, comprising:  
a penetrator;  
a cutting blade located at a distal end of said penetrator;  
an insufflation passageway configured for discharging a pressurized fluid while said cutting blade is inside a body tissue and for transporting said pressurized fluid to the body tissue when said cutting blade substantially penetrates the body tissue; and  
a guard movable with respect to said cutting blade and configured to selectively expose said cutting blade, said guard having a substantially planar portion thereof extending substantially parallel to said cutting blade.

141. (New) A surgical device as claimed in claim 140, which comprises a tissue expander expanded at a distal end of the penetrator for expanding a tissue cut by said cutting blade.

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142. (New) A surgical device, comprising:  
a penetrator;  
a cutting tip located at a distal end of said penetrator;  
a tissue expander located at a distal end of said penetrator for expanding a tissue cut by said cutting tip for insertion of said penetrator;

a guard movable with respect to said cutting tip for exposing said cutting tip while said cutting tip is beginning to cut a tissue layer and while said cutting tip is in said tissue layer, and for progressively covering the end of said cutting tip immediately after a most distal point of said cutting tip has substantially past through said tissue layer; and

wherein said cutting tip comprises at least one blade substantially parallel to said main axis and having at least one blade edge, said guard being positioned substantially parallel to said at least one blade and wherein said safety guard further comprises a safety

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guard edge having a guard edge angle smaller than a blade edge angle defined by an intersection of said at least one blade edge with said main axis.

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